

013- ISOLATION AND CHARACTERIZATION OF MICROORGANISMS FROM A LANDFARMING OF THE PROVINCE OF SAN LUIS WITH POTENTIAL CAPACITY FOR USE IN BIOAUGMENTATION

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The final disposal of industrial effluents with organic or inorganic compounds is a concern for companies and governments. Consequently, in recent decades, different methodologies have been used to reduce them, without causing damage to the environment, among which are bioremediation processes. Landfarming is an ex-situ bioremediation treatment process that is carried out in the upper zone of the soil. In San Luis Province there is a landfarming that receives effluents from chemical industry and has been used for more than 10 years. The aim of this work was to isolate microorganism from a landfarming soil with the capacity to tolerate the environmental stresses which can favor increasing and accelerating landfarming processes. The samples were collected in two stages, during the winter period of 2022: the first was taken from the supernatant of the effluent after its discharge; the second from the mud generated in the mixture of soil and effluent, after 5 days of discharge. The sampling points were 3 at different distances from the discharge of effluents. Two approaches were utilized to isolate microorganism from the landfarming soil: a direct isolation approach in EG medium following the streaked-on agar plate and enrichment approach in liquid medium incubated a 30°C, 150 rpm for 72 h. While, using a direct isolation approach only 12 morphotypes were isolated, using enrichment approach 15 morphotypes were isolated. To characterize the isolates, the characteristics of the colonies, the cells and the Gram coloration in the case of bacteria were taken into account. The isolates will be molecularly identified. It is well established that only approximately 1% of microorganisms on Earth can be readily cultivated *in vitro*. But this work aims to use microorganisms in bioaugmentation process, so it only focused on culturable microorganisms. These preliminary results show that landfarming has an active microbiota and it is feasible to isolate microorganisms that can be used in bioaugmentation processes with native strains.

014- EVALUATION OF BIOLOGICAL AND MICROBIOLOGICAL QUALITY PARAMETERS IN AN AMENDED SUBSTRATE FROM ALPERUJO'S ANAEROBIC DIGEST

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Anaerobic Digestion (AD) process is based on a series of metabolic reactions, mediated by different group of microorganisms that produce Biogas (methane) and a digested substrate (DS). The DS has been defined as a semisolid fraction from this AD that can be used in both liquid and solid form. It contains organic material and considerable amounts of mineral (nitrogen, phosphorus, potassium) with low C/N index, which makes them interesting as fertilizers or soil amendments. In previous work, using germination seed method, no phytotoxicity where found when digest concentration were 10 and 50 %. What's more, root elongation and germination index were higher than blank test, so the aim of this work was analyze biological and microbiological quality parameter such as microorganisms and enzymes as responsible agents in vegetable promoting activities. The essays consist in 12 samples with 3 repetitions. They were carried out using 500 g pots with fertile soil and digest addition in 25 t/ha dose with 1/1, 1/10 and 1/100 dilutions. A witness sample (without digested) and commercial fertilizer Fertifox ® were included among samples. Tomato seeds (*Solanum lycopersicum*) were cultivated at moderated temperature, indirect solar exposure; irrigated day 0 and 15 with diluted fraction digested and then with 75 ml of water tap. After 28 days, plants were harvest. Parameters regarding plant growing were measured (fresh and dry weight, number of leaves, aerial part and root elongation, among others). Also, were analyzed; presence of main microbial group (molds, yeast and bacteria) using selective culture method and enzymes activities (Laccase, β glucosidase, Amylase and Cellulase) responsible for nutrients assimilation. In terms of plant growth parameters, some negative effects (less dry and fresh weight) were observed when digest was added without dilution. Regarding microbial groups, CFU was higher for mold and bacteria when dilution 1/100 was applied. On the contrary, Yeast CFU was lower. In terms of enzymatic activities, all samples show less activity, between 70-80 % of witness sample. B-glucosidase was the only one that show higher activity when dilutions 1/10 and 1/100 were tested. Finally it is conclude that the addition of diluted fraction of the digested increases microbial groups population, which favors plant nutrients assimilation Future essays will include determination of other compounds such as humic acids to set syngas effects.